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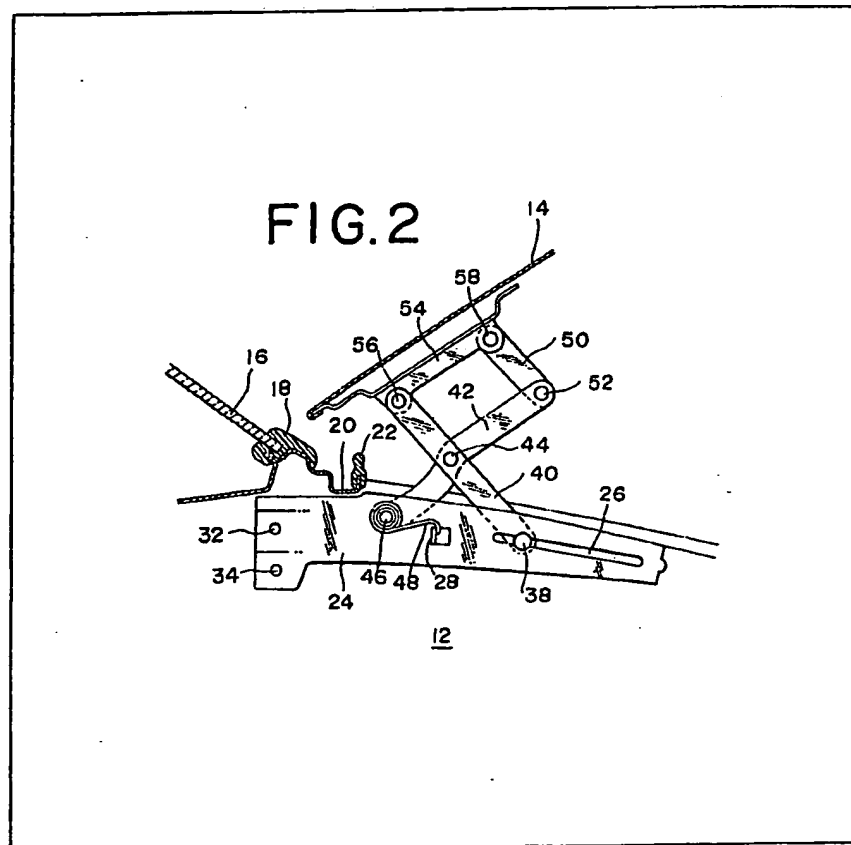
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(54) Hinge mechanism of a vehicle
boot lid

(57) A scissor hinge mechanism is
used for swingably connecting a lid
(14) to a vehicle boot (12). Opening
the mechanism causes the lid (14) to
open and folding the mechanism

causes the lid (14) to close. The hinge
mechanism is in the form of a pivoted
link work (40, 42, 50) subjected to the
influence of a coiled leaf spring (48).
The link (40) acts as a stay having a
pin (38) operating in a slot (26) in an
elongate bracket 24 secured to the
inside of the boot (12).



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FIG. 1

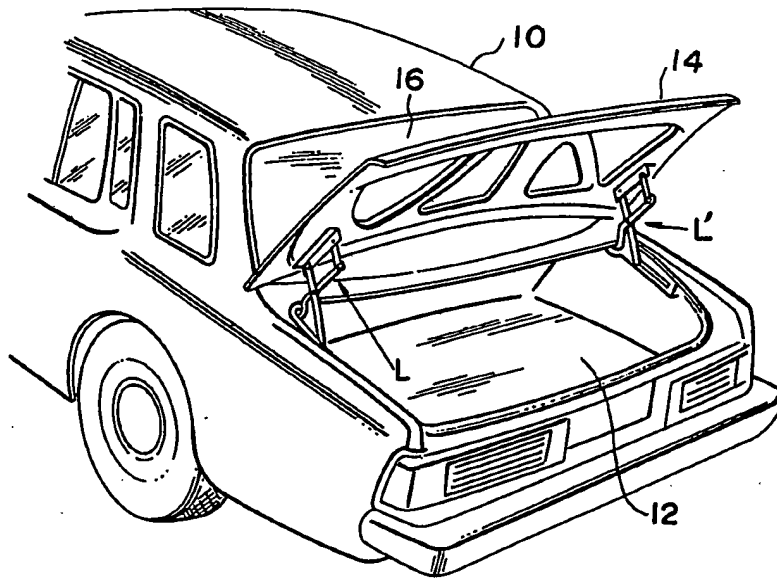
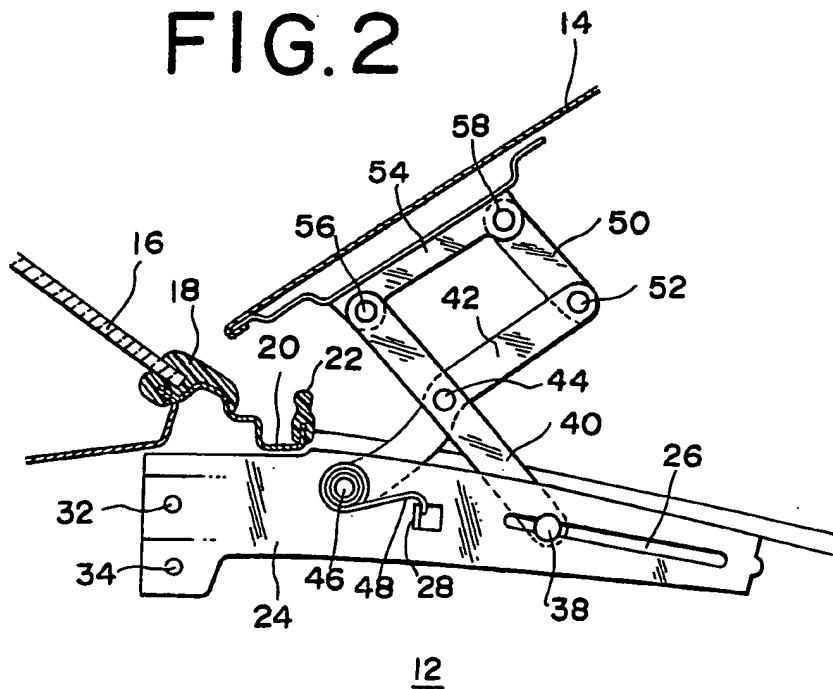
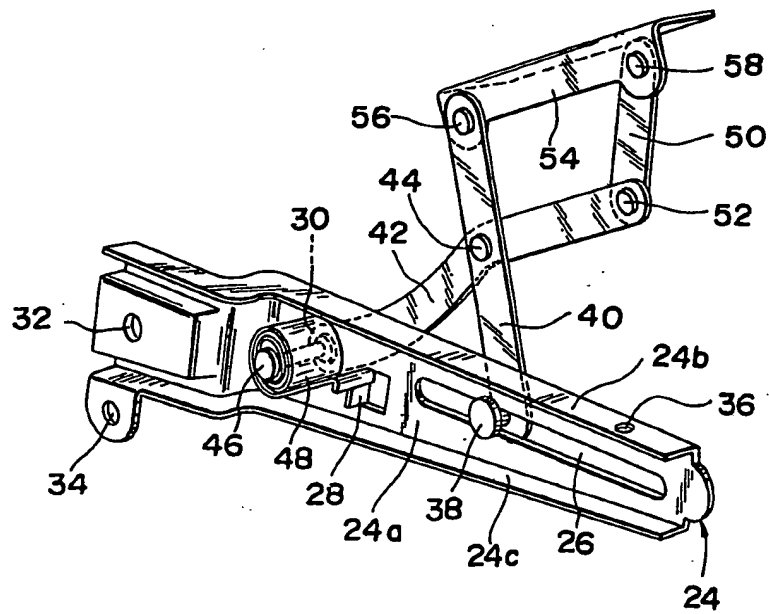


FIG. 2



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FIG. 3



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SPECIFICATION

Hinge mechanism of an automotive trunk lid

The present invention relates in general to a hinge mechanism for use with an automobile, and more particularly to a hinge mechanism for a swingably operable boot lid of the vehicle.

As a hinge mechanism of an automotive boot lid or its equivalent, there has been hitherto proposed many types. Some of them are however bulky in construction and fail to provide the lid with smooth and reliable opening and closing movement due to their inherent construction. Further, some are of a so-called "projectable type" which has a portion which projects considerably into the usable space of the boot upon closing of the lid. This type hinge mechanism not only narrows the effective boot space but also has a possibility to damage baggages in the boot upon closing of the lid.

It is therefore an object of the present invention to provide a hinge mechanism which solves the above-mentioned problems.

According to the present invention, there is provided a hinge mechanism swingably connecting a lid member to a vehicle body. The hinge mechanism comprises an elongate bracket connected to the vehicle body and having a longitudinally extending slot formed therein; a first arm member having at one end a pin slidably received in the slot; a second arm member having one end pivotally connected to the elongate bracket, the first and second arm members being swingably connected at their middle sections so that they are swingable to each other about the middle sections; a third arm member having one end pivotally connected to the other end of the second arm member; and a lid-mounting bracket on which the lid member is mounted, the lid-mounting bracket having spaced first and second portions to which portions the other end of the first arm member and the other end of the third arm member are pivotally connected.

In the accompanying drawings:—

Fig. 1 is a view of an automotive boot to which a lid is swingably connected by means of a pair of hinge mechanisms of the present invention;

Fig. 2 is a partially sectional front view of the hinge mechanism indicated by an arrow "L" of Fig. 1; and

Fig. 3 is a perspective view of the hinge mechanism of Fig. 2.

Referring to Fig. 1 of the drawings, there is shown a passenger motor vehicle 10 having a rear boot 12. A lid 14 is swingably connected at its front portion to the boot 12 by means of a pair of hinge mechanisms "L" and "L'" of the present invention. Because the two hinge mechanisms "L" and "L'" have substantially the same construction, the following detailed explanation will be made with respect to one of them, that is, the hinge mechanism "L" arranged at the left side of the boot 12, as viewed in Fig. 1.

Referring to Figs. 2 and 3, there is shown an improved hinge mechanism "L" of the present

invention. In Fig. 2, reference numeral 16 indicates a glass pane which is coupled in a rear window opening of the vehicle body 10 through a weather strip 18. Denoted by numeral 20 is a groove portion of the vehicle body which extends across the boot 12 to form a front boundary of the mouth of the boot 12. An elongate resilient sealing strip 22 is mounted on the outside wall of the groove portion 20. As will become clear hereinafter, upon closing, the lid 14 presses upon the sealing strip 22 to provide tight sealing therebetween.

The hinge mechanism "L" comprises an elongate bracket 24 which, as is seen from Fig. 3, has a generally channel-shaped construction including a base section 24a and opposed wall sections 24b and 24c. The bracket 24 has at its right portion of the base section 24a, as viewed in Figs. 2 and 3, a longitudinally extending slot 26, and at its middle portion a hook 28 and near the hook 28 a circular opening 30. The hook 28 is formed by raising a limited portion of the base section 24a as is seen from Fig. 3. The bracket 24 is securely connected to an interior side wall of the boot 12 in a manner to extend longitudinally with respect to the axis of the vehicle. For this connection, the bracket 24 has several bolt holes 32, 34 and 36 through which bolts (not shown) pass.

Slidably received in the elongate slot 26 of the bracket 24 is a headed pin 38 which is fixed to a lower end of a first arm member 40. A second arm member 42 is pivotally connected at its middle section to the middle section of the first arm member 42 by means of a pivot pin 44. The lower end of the second arm member 42 has a shaft 46 which loosely passes through the afore-mentioned circular opening 30 of the bracket 24 to project considerably within the channel of the bracket 24. A coiled leaf spring 48 is disposed about the projecting section of the shaft 46. The spring 48 is hooked at its outer end to the raised hook 28 of the bracket 24 and connected at its inner end to the shaft 46 so that the shaft 46 and thus the second arm member 42 are biased to rotate about the axis of the shaft 46 in a counterclockwise direction as viewed in Figs. 2 and 3.

A third arm member 50 is pivotally connected at its lower end to the upper end of the second arm member 42 by means of a pivot pin 52. A lid-mounting bracket 54 on which the lid 14 is mounted is pivotally connected at two spaced portions to respective upper ends of the first and third arm members 40 and 50 by means of pivot pins 56 and 58. It will be thus appreciated that the hinge mechanism "L" or "L'" mentioned above constitutes a so-called "scissor hinge" which has an advantage in that it occupies only a small space when folded up. Further, it will be noted that the presence of the spring 48 has the hinge mechanism "L" biased to adopt a position inducing the open condition of the boot lid 14, as shown in the drawings.

Operation of the hinge mechanism "L" will be described in the following with reference to Fig. 2.

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When, for closing the lid 14, it is pushed down against the biasing force of the spring 48, the first, second and third arm members 40, 42 and 50 and the lid-mounting bracket 54 are compelled to move down while pivoting and finally they are compressed together adjacent the bracket 24 in folded form. During this movement, the headed pin 38 on the first arm member 40 is compelled to move rightwardly in the slot 26 and finally stops at a predetermined rightmost position in the slot, inducing complete covering of the lid 14 relative to the mouth of the boot 12. Under this condition, the lid 14 is pressed upon the sealing strip 22 to achieve tight sealing therebetween.

When the pressing force is removed from the lid 14, the hinge mechanism "L" is compelled to move by the action of the spring 48 rotating the second arm member 42 clockwise, causing the lid 14 to open. It should be noted that the sliding friction generated upon movement of the headed pin 38 along the slot 26 enables the expanding movement of the hinge mechanism "L" to be made slowly and smoothly.

Although not shown in the drawings, a known latch mechanism is provided for latching the lid 14 in its closed position.

As will be appreciated from the foregoing description, in the hinge mechanism "L" or "L'" of the present invention, there is no portion which projects into the space of the boot upon opening and closing movement of the boot lid. Thus, the boot contains more usable space and there is no possibility of damaging the baggages in the boot upon closing the lid. Further, by the nature of the scissor hinge mechanism, smooth and reliable opening and closing movement of the lid is achieved.

CLAIMS

1. A hinge mechanism swingably connecting a lid member to a vehicle body, comprising:
an elongate bracket connected to said vehicle

body and having a longitudinally extending slot formed therein;

a first arm member having at one end a pin slidably received in said slot of the elongate bracket;

a second arm member having one end pivotally connected to said elongate bracket, said first and second arm members being swingably connected at their middle sections so that they are swingable to each other about the middle sections;

a third arm member having one end pivotally connected to the other end of said second arm member; and

a lid-mounting bracket on which said lid member is mounted, said lid-mounting bracket having spaced first and second portions thereof to which portions the other end of said first arm member and the other end of said third arm member are pivotally connected, whereby when said lid member takes its open position, said first, second and third arm members and said lid-mounting bracket, which thus constitute a scissor hinge mechanism, assume their open conditions, shifting said pin in a direction toward the portion where the end of said second arm member is pivotally connected to said elongate bracket, and when said lid member assumes its closed position, the scissor hinge mechanism assumes its folded condition, shifting said pin in the opposite direction.

2. A hinge mechanism as claimed in Claim 1, further comprising biasing means for biasing said second arm member to rotate in a direction to open the scissor hinge mechanism.

3. A hinge mechanism as claimed in Claim 2, in which said biasing means is a coil spring which has one end hooked to a portion of said elongate bracket and the other end connected to the end of said second arm member.

4. A hinge mechanism swingably connecting a lid member to a vehicle body substantially as described with reference to, and as illustrated in, the accompanying drawings.

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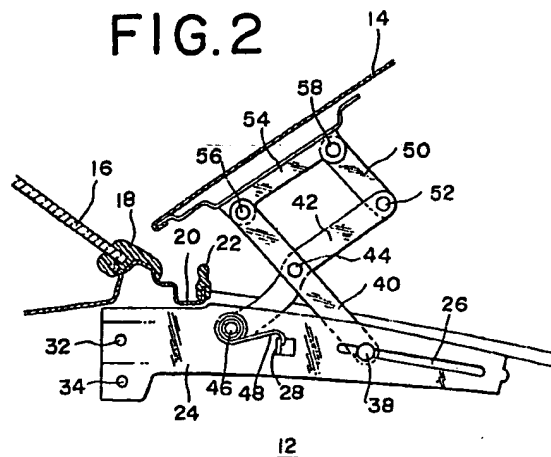
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GB 934753
GB 912195
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GB 675395
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(54) **Hinge mechanism of a vehicle boot lid**

(57) A scissor hinge mechanism is used for swingably connecting a lid (14) to a vehicle boot (12). Opening the mechanism causes the lid (14) to open and folding the mechanism

causes the lid (14) to close. The hinge mechanism is in the form of a pivoted link work (40, 42, 50) subjected to the influence of a coiled leaf spring (48). The link (40) acts as a stay having a pin (38) operating in a slot (26) in an elongate bracket 24 secured to the inside of the boot (12).



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FIG. 1

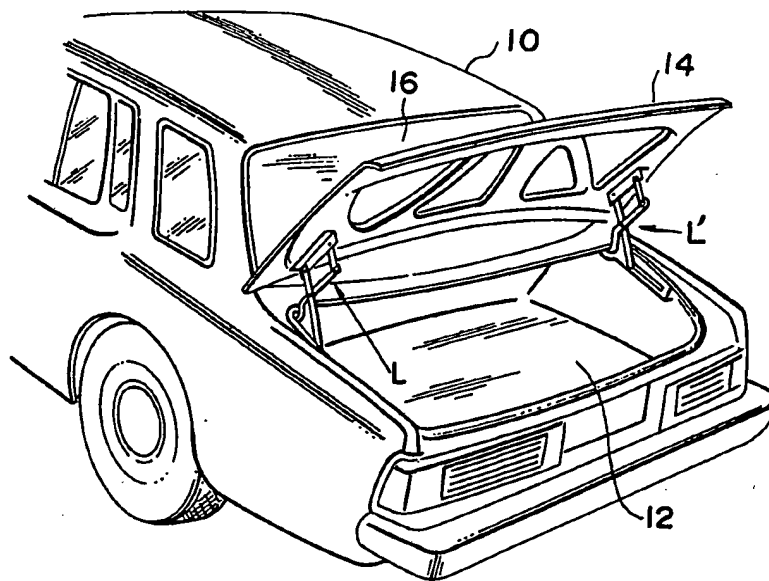


FIG. 2

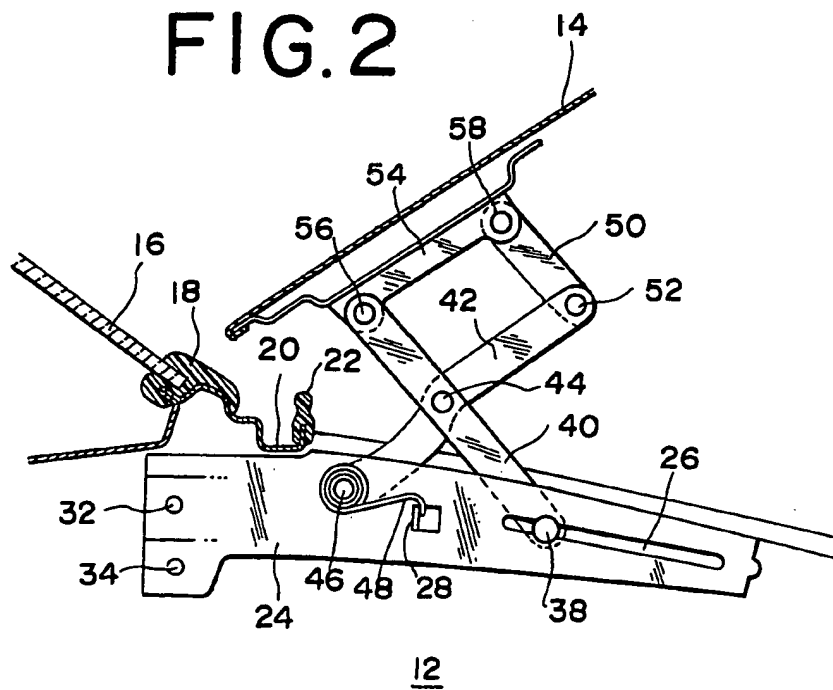
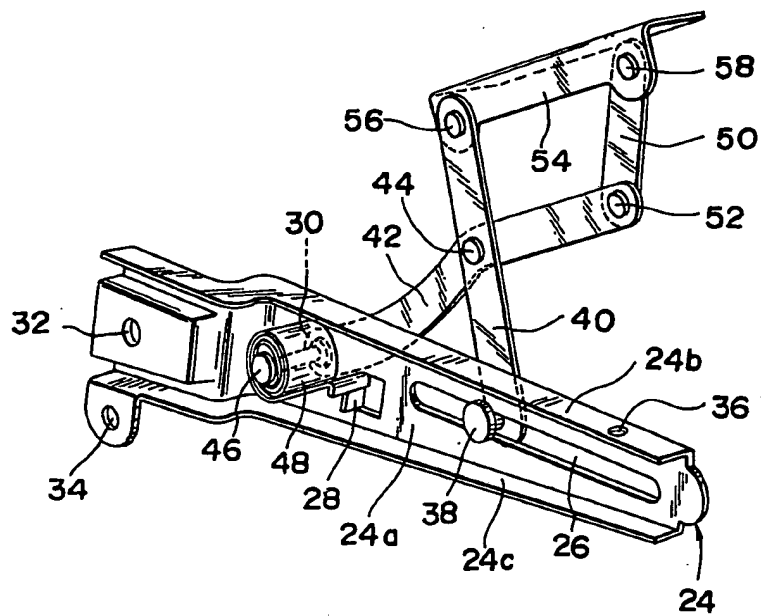


FIG. 3



SPECIFICATION

Hinge mechanism for an automotive trunk lid

The present invention relates in general to a hinge mechanism for use with an automobile, and more particularly to a hinge mechanism for a swingably operable boot lid of the vehicle.

As a hinge mechanism of an automotive boot lid or its equivalent, there has been hitherto proposed many types. Some of them are however bulky in construction and fail to provide the lid with smooth and reliable opening and closing movement due to their inherent construction. Further, some are of a so-called "projectable type" which has a portion which projects considerably into the usable space of the boot upon closing of the lid. This type hinge mechanism not only narrows the effective boot space but also has a possibility to damage baggages in the boot upon closing of the lid.

It is therefore an object of the present invention to provide a hinge mechanism which solves the above-mentioned problems.

According to the present invention, there is provided a hinge mechanism swingably connecting a lid member to a vehicle body. The hinge mechanism comprises an elongate bracket connected to the vehicle body and having a longitudinally extending slot formed therein; a first arm member having at one end a pin slidably received in the slot; a second arm member having one end pivotally connected to the elongate bracket, the first and second arm members being swingably connected at their middle sections so that they are swingable to each other about the middle sections; a third arm member having one end pivotally connected to the other end of the second arm member; and a lid-mounting bracket on which the lid member is mounted, the lid-mounting bracket having spaced first and second portions to which portions the other end of the first arm member and the other end of the third arm member are pivotally connected.

In the accompanying drawings:—

Fig. 1 is a view of an automotive boot to which a lid is swingably connected by means of a pair of hinge mechanisms of the present invention;

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A third arm member 50 is pivotally connected at its lower end to the upper end of the second arm member 42 by means of a pivot pin 52. A lid-mounting bracket 54 on which the lid 14 is mounted is pivotally connected at two spaced portions to respective upper ends of the first and third arm members 40 and 50 by means of pivot pins 56 and 58. It will be thus appreciated that the hinge mechanism "L" or "L'" mentioned above constitutes a so-called "scissor hinge" which has an advantage in that it occupies only a small space when folded up. Further, it will be noted that the presence of the spring 48 has the hinge mechanism "L" biased to adopt a position inducing the open condition of the boot lid 14, as shown in the drawings.

Operation of the hinge mechanism "L" will be described in the following with reference to Fig. 2.

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As will be appreciated from the foregoing description, in the hinge mechanism "L" or "L'" of the present invention, there is no portion which projects into the space of the boot upon opening and closing movement of the boot lid. Thus, the boot contains more usable space and there is no possibility of damaging the baggages in the boot upon closing the lid. Further, by the nature of the scissor hinge mechanism, smooth and reliable opening and closing movement of the lid is achieved.

CLAIMS

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an elongate bracket connected to said vehicle

body and having a longitudinally extending slot formed therein;

a first arm member having at one end a pin slidably received in said slot of the elongate bracket;

a second arm member having one end pivotally connected to said elongate bracket, said first and second arm members being swingably connected at their middle sections so that they are swingable to each other about the middle sections;

a third arm member having one end pivotally connected to the other end of said second arm member; and

a lid-mounting bracket on which said lid member is mounted, said lid-mounting bracket having spaced first and second portions thereof to which portions the other end of said first arm member and the other end of said third arm member are pivotally connected, whereby when said lid member takes its open position, said first, second and third arm members and said lid-mounting bracket, which thus constitute a scissor hinge mechanism, assume their open conditions, shifting said pin in a direction toward the portion where the end of said second arm member is pivotally connected to said elongate bracket, and when said lid member assumes its closed position, the scissor hinge mechanism assumes its folded condition, shifting said pin in the opposite direction.

2. A hinge mechanism as claimed in Claim 1, further comprising biasing means for biasing said second arm member to rotate in a direction to open the scissor hinge mechanism.

3. A hinge mechanism as claimed in Claim 2, in which said biasing means is a coil spring which has one end hooked to a portion of said elongate bracket and the other end connected to the end of said second arm member.

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